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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/015,848

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Adrian W. Payne

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

PERILLA, JASON M

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/015,848

Applicant(s)

PAYNE ET AL.

Examiner

Jason M. Perilla

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,6-11,13 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,13,16 and 17 is/are rejected.
- 7) ☒ Claim(s) 9 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1, 2, 6-11, 13, and 16-18 are pending in the instant application.

#### ***Drawings***

2. The drawings are objected to because the replacement figures 4 and 7, while correcting the objections over text labels, are illegible copies which could not be reproduced clearly. Corrected drawing sheets in compliance with 37 CFR § 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR § 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Response to Amendment/Argument***

3. Applicant's arguments filed August 31, 2005 have been fully considered but they are not persuasive.

The Applicant suggests that the prior art reference combinations under 35 U.S.C. § 103(a) of Wang et al (US 5459762; hereafter "Wang" – previously cited) in view of Fumio Sugiyama (IDS paper April 22, 2002, reference AL; hereafter "Fumio"), and in further view of Eglit (U.S. Pat. No. 6272193) do not disclose (1) intermittently integrating at least one sample in the vicinity of the  $M/2$  sample, (2) comparing the intermittent integration result to the selected threshold and (3) using the result (of the comparing) to update the selected threshold value.

Regarding the claimed limitation (1), Wang clearly discloses integrating according to references 600 and 610 of figure 6. That is, the blocks 600 and 610 of figure 6 illustrate the notoriously and universally known notation of integration of symbols over time periods of  $(n+2)T$  to  $nT$  and  $(n+3)T$  to  $(n+1)T$ , respectively. Furthermore, this integration is made intermittent due to the switch 615 of figure 6. Wang simply does not explicitly disclose that the input to the integrator is a signal which was oversampled (by a factor of  $M$ ). However, as applied below, Eglit teaches the advantages of oversampling. Specifically, oversampling could aid in the selection of a specific and accurate sample position having a maximum probability of representing the current symbol. Therefore, in the combination of at least Wang in view of Eglit, the input to the integrator of Wang is the chosen samples (in the vicinity of the  $M/2$ ) sample of each of at least two bit periods which have been oversampled by a factor of  $M$  so that the  $M/2$  sample has a maximum probability of representing the current symbol.

Regarding the claimed limitation (2), Wang clearly illustrates the output of the integration being input to a comparator (fig. 6, ref. 620) where it is compared against a selected threshold (fig. 6, "A").

Regarding the claimed limitation (3) Wang clearly illustrates that the result of the comparison is fed into a delay line (fig. 6, refs. 630 and 640). The outputs of the delay line (fig. 6, "b-1" and "b-2") are subsequently utilized as input to the level selector (fig. 6, ref. 650) where they are utilized to update the selected threshold value (fig. 7). Figure illustrates how the various results of the comparison, (i.e. fig. 6, "b-1" and "b-2") relate to the resulting selection of a threshold (fig. 6, "A"). Therefore, the result of comparing is utilized to select the threshold value.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7, 8, 13, 14, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wang et al (US 5459762; hereafter "Wang" – previously cited) in view of Fumio Sugiyama (IDS paper April 22, 2002, reference AL; hereafter "Fumio" – previously cited, reference is made to translation submitted with first office action), and in further view of Eglit (U.S. Pat. No. 6272193).

Regarding claim 1, Wang discloses according to figure 6 a method of determining the value of a signal ( $I_1$ ), in which N previously detected bits (where N is at

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least 2) of a demodulated bit stream (630 and 640; col. 2, lines 29-31) are used to select (650) which one of a plurality of threshold levels (fig. 7) against which the current demodulated bit is to be compared in a bit slicer (620); intermittently (fig. 7, ref. 615) integrating the demodulated bit stream over at least two bit periods (fig. 6, refs. 600 and 610) and comparing (fig. 6, ref. 620) the results with a selected threshold level (fig. 6, ref. 650). Wang discloses using the output of the slicer (620) to update the threshold level (650) which is applied to the slicer (negative input of slicer) for comparison against the integrated demodulated bit stream (positive input of slicer). Wang does not explicitly disclose that the result of the comparison output of the slicer is used to update the *value* of the selected threshold level chosen. However, Fumio teaches an analogous slicer, according to figure 5, wherein two bits held in the register (4) of a demodulated bit stream (1) (pg. 7, lines 9-10) are used to select (5a, 7a; pg. 7, lines 13-15) one of a plurality of threshold levels (6a-6d) against which the current demodulated bit is to be compared in a bit slicer (2), and of which ***value is to be updated*** using the current demodulated bit (8, 7b, fig. 5; pg. 7, lines 16-18). Fumio teaches that, accordingly to his invention, "even in a case where a judgment threshold value deviated from an optimal threshold value due to the variation of the AC level or DC level of an input signal, [the updating is] to correct & assimilate the judgment threshold value toward *the optimal value* on every data arrival occasion and *to render correct data judgments in a stable value after the assimilation*" (pg. 6, "effects of the invention"). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the threshold value updating as taught by Fumio in the method of Wang

because it could advantageously be utilized to render correct and stable data judgments after iteratively updating the threshold values. Therefore, the references 630, 640, and 650 (fig. 6) of Wang would be replaced by references 6, 5a, 5b, 8, 9, 7a, 7b, and 6a-6d (fig. 5) of Fumio.

Further regarding claim 1, Wang discloses sampling (fig. 5, ref. 510/515) the demodulated bit stream (fig. 5, "BASEBAND SIGNAL"), but Wang in view of Fumio do not explicitly disclose oversampling the demodulated bit stream by a factor of  $M$ , where  $M$  is an integer on the order of 20; and integrating at least one sample in the vicinity of the  $M/2$ th sample for the at least 2 bit periods (as disclosed above) to generate the demodulated signal to be compared. However, Eglit teaches a method of oversampling (col. 1, lines 20-35) by a factor of  $L$  and using the plurality of samples to determine the optimal sampling phase (col. 1, lines 30-40; col. 6, lines 10-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize an oversampling technique as taught by Eglit in the method of Wang in view of Fumio because, by overasampling, a specific and accurate sample position and phase may be chosen that has the "maximum probability of representing the current symbol" (col. 6, line 13).

Finally regarding claim 1, Wang in view of Fumio, and in further view of Eglit disclose oversampling generically (i.e. by a factor of  $L$ ), but not explicitly disclose oversampling by a factor of  $M=20$ . However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an oversampling rate of 20 because it has been held that discovering an optimum value of a result

effective variable (i.e. the rate of oversampling) involves only routine skill in the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

Regarding claim 2, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 1 as applied above. Further, Fumio discloses having 2 mean estimators (fig. 5, refs. 12a and 12b; pg. 8, lines 1-10) associated with each of the threshold levels (fig. 5), and for a selected one of the threshold levels obtaining the average or difference value (fig. 5, ref. 13) of the associated 2 mean estimators and using the result as the current selected one of the threshold values (fig. 5, ref. 17).

Regarding claim 7, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 1 as applied above. Further, Fumio provides, subtracting (Fumio; fig. 5, ref. 8) the demodulated signal from the one of the plurality of selected preset default values to produce a current dc offset estimate (output of subtracter), deriving a mean dc offset (Fumio; fig. 5, refs. 12d or 12b; pg. 8, lines 1-10) from the current dc offset and a plurality of preceding dc offset estimates (average 12a or 12b), combining the mean dc offset estimate with a selected threshold value (Fumio; fig. 5, ref. 16) and applying via a switch (Fumio; fig. 5, ref. 7a) the combined signal to a threshold input (Wang; fig. 6, ref. 620, negative input) of the bit slicer.

Regarding claim 8, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 7 as applied above. Further, Fumio discloses subtracting the dc offset (fig. 5, ref. 8) estimate from the demodulated signal prior to updating the selected threshold value.



Regarding claim 13, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 13 as applied to claim 1 above.

Regarding claim 17, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 13 as applied above. Further, Fumio discloses the remaining limitations of claim 17 as applied to claim 7 above.

5. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Fumio, in further view of Eglit, and in further view of Kranz (US 6046643).

Regarding claim 6, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 1 as applied above. Wang in view of Fumio disclose integrating the demodulated bit stream as applied to claim 1 above but do not explicitly disclose oversampling the demodulated bit stream and weighting the oversampled samples to generate a demodulated signal to be compared. However Kranz teaches a method of oversampling (fig. 1, ref. A) and weighting (fig. 1, ref. g2) a bit stream (col. 3, lines 28-30). One skilled in the art is aware that the oversampling and weighting of a bit stream provides a more accurate interpretation of an bit stream into a digital form. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize oversampling and weighting as taught by Kranz in the method of Wang in view of Fumio, and in further view of Eglit.

Regarding claim 16, Wang in view of Fumio, and in further view of Eglit disclose the limitations of claim 13 as applied above. Further, Wang in view of Fumio, in further

view of Eglit, and in further view of Kranz disclose the remaining limitations of claims 16 as applied to claim 6 above.

***Allowable Subject Matter***

6. Claims 9 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The indication of allowable subject matter is made regarding claims 10 and 11.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to 39 whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

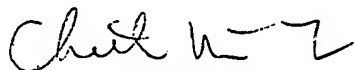
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jason M. Perilla  
September 13, 2006

jmp



CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER